

Alaska Fisheries Science Center
Resource Ecology & Fisheries Management
7600 Sand Point Way NE, Bldg. 4
Seattle, WA 98115
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Cruise Report
F/T Seafisher Cruise
SF200401 (7 – 23 October 2004)

Project Title: Atka Mackerel Tag Recovery Amchitka and Tanaga Islands and Seguam Pass, Aleutian Islands Alaska

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Scientific Purpose

The first objective of our tag release-recovery studies is to determine the efficacy of trawl exclusion zones as a management tool to maintain prey abundance/availability for Steller sea lions at local scales. Trawl exclusion zones were established around sea lion rookeries as a precautionary measure to protect critical sea lion habitat, including local populations of prey such as Atka mackerel. Localized fishing may affect Atka mackerel abundance and distribution near sea lion rookeries. Tagging experiments are being used to estimate abundance and movement between areas open and closed to the Atka mackerel fishery. A feasibility study was conducted in 1999 at Seguam Pass. In summer 2000, approximately 8000 tagged Atka mackerel were released in Seguam Pass, and in 2001 approximately 1000 were released during a truncated cruise. In June-July 2002, ~ 27,700 fish were tagged in the Seguam Pass area, and ~ 12,800 were tagged near Tanaga Pass. In July 2003 approximately 14,750 fish were tagged and released in the Amchitka Island area. Recovery of tagged fish is supplied by the fishery in the open area outside the trawl exclusion zone. Recoveries in the closed area are provided by chartered recovery cruises. To compare charter recoveries to fishery recoveries, the charter also provides recovery in the area open to fishing. Our tagging studies to date have focused on Atka mackerel movement and abundance in the presence of a fishery. In addition to the data gathered from the tag and release experiment, biological data such as stomachs, gonad samples, age structures, sexed length frequencies, and catch composition are also collected for each haul during the tag recovery charter.

Personnel SF200401 (Leg 1, Seguam Pass, October 7 – 14)

<u>Name</u>	<u>Sex/Natl.</u>	<u>Position</u>	<u>Organization</u>
1. K. Rand	F/USA	Field Party Chief	AFSC/S
2. R. Lauth	M/USA	Watch Leader	AFSC/S
3. D. Cooper	M/USA	Fish Biologist	AFSC/S
4. T. Yasanak	M/USA	Fish Biologist	AFSC/S

Personnel SF200401 (Leg 2, Amchitka and Tanaga Islands, October 16 – 23)

<u>Name</u>	<u>Sex/Natl.</u>	<u>Position</u>	<u>Organization</u>
1. K. Rand	F/USA	Field Party Chief	AFSC/S
2. D. Cooper	M/USA	Watch Leader/Fish Biologist	AFSC/S
3. S. Neidetcher	F/USA	Watch Leader/Fish Biologist	AFSC/S
4. T. Yasanak	M/USA	Fish. Biologist	AFSC/S
5. R. Lauth	M/USA	Special Project	AFSC/S

Cruise Schedule and Activities SE200301

7 October	Board vessel @ 0900, Dutch Harbor, AK
7-8	Transit to Seguam Pass
9-15	Recovery tows, Seguam Pass
15	Transit, offload, crew change Adak, AK
16-20	Recovery tows, Amchitka Island
20-22	Recovery tows, Tanaga Island
23	Transit to Adak, AK
23 October	Offload vessel in Adak, AK

Summary of Results***Total Atka mackerel catch by area***

During the years 1999-2002 NMFS released ~ 37,000 tags in Seguam Pass and 12,800 in Tanaga Pass in each of the strata shown in Figures 1 and 3 (no fish were tagged and released in these areas during 2003 and 2004). During 2003 roughly 14,750 tags were released near Amchitka Island (no fish were tagged and released in 2004), shown in Figure 2. This Atka mackerel recovery charter recovered tagged fish in the Seguam Pass, Amchitka and Tanaga Island areas. Table 1 shows the distribution of tows among the strata in all three areas for the 2004 charter. A total of 30 tows were conducted in Seguam Pass, 27 tows near Amchitka Island and 14 tows near Tanaga Island. Table 2 shows the distribution of Atka mackerel catch by strata in all three study areas. A total of 836 MT was caught in Seguam Pass, 336 MT at Amchitka Island and 313 MT at Tanaga Island. The total catch of Atka mackerel was 1,485 MT and 275 MT of bycatch (species other than Atka mackerel).

Length-frequency distribution

Approximately 150 fish were collected, sexed and lengthed per haul in all three study areas. Table 4 shows the total number of fish that were lengthed. Figure 3 illustrates the percent length frequency distributions for Atka mackerel during the 2004 recovery in Seguam Pass. The length-frequency distribution of fish at Seguam Pass was similar for both sexes and unimodal at 37 cm. Figure 4 shows the percent frequency distribution near Amchitka Island. The length distribution

of fish during the recovery cruise was similar to that in Seguam with a unimodal distribution at 36 cm for males and 35 cm for females. There also seemed a greater proportion of males at Amchitka than at Seguam Pass. Figure 5 shows the percent frequency distribution near Tanaga Island and is unimodal at 36 cm for both sexes. During this cruise we recorded length frequencies for males in spawning color separately in order to relate males in spawning color to spawning habitat. It appeared that in October the proportion of males in spawning color was overall small with a unimodal distribution of 37 cm at Seguam and 36 cm at Amchitka and Tanaga. However, males in spawning colors usually were found in a small number of hauls in greater proportions.

Species Catch Composition

Although the focus of the tag recovery was to catch Atka mackerel, other species other than Atka mackerel were caught during the hauls in each of the three study areas (Table 5). The most abundant bycatch species were Northern rockfish, Pacific cod, Pacific ocean perch and Walleye pollock. We also collected Atka mackerel egg masses as part of an ongoing study on Atka mackerel reproductive ecology.

Wild tag recoveries

No tags were released in 2004 due to shortages in budget. It was assumed that the probability of catching wild tagged fish would be similar to the tag-recovery in 2003. However, tag recapture probabilities seemed much lower than in 2003. This was most likely due to an influx on young fish during the last 2 year. Stock assessment reported strong year classes for the 1998 and 1999 year classes which would be recruiting into the fishery in 2004. This most likely diluted the tagged population and lowered the tag recapture probabilities significantly. Tag reporting rates were high throughout the cruise (see below) and it is unlikely that low tag-reporting contributed to the low wild tag recovery during this cruise.

Only 2 ‘wild tagged’ Atka mackerel were caught in Seguam Pass, 3 were caught near Amchitka Island and 1 tag was recovered near Tanaga Island. ‘Wild tagged’ fish are fish that have been tagged during a previous tag release cruise as opposed to tagged fish that were seeded into the catch during the recovery cruise to obtain the tag reporting rate (see below).

Tag reporting rate

Reporting rate is defined as the proportion of tagged fish caught by the vessel that are actually found and reported. To determine this, the scientific personnel in the factory tagged 20 Atka mackerel and distributed them randomly throughout the haul. This was done for all hauls during the cruise. Only pink tags were used for this recovery event in all three study areas. These “seeded” tagged fish were recovered in the factory by the vessel and scientific crew. Table’s 6 and 7 show the reporting rates in all areas. Reporting rates were high, ranging from 95% to 96% for single tagged fish and from 98% to 100% for doubly tagged fish..

Biological samples

Table 4 summarizes the biological samples taken from Atka mackerel during the tag recovery cruise. Gonads, stomachs and otoliths were collected from 10 fish (5 females and 5 males) from almost every tow.

Special project video drop camera

A video drop camera was used for locating Atka mackerel nesting sites and documenting the location, depth, and habitat-type at nesting sites.

The work was done concurrent with the Atka mackerel tag recapture cruise aboard the F/V Seafisher. There were 9 camera drops in Seguam Pass, 11 around Amchitka Island, and 3 near Tanaga Island for a total of 23 camera drops. Real-time video feed and winch control were used to navigate the towed video camera to avoid hanging up while the vessel and camera drifted over the bottom. Video feed was recorded with GPS overlay and a digital video recording device and the drop camera was also equipped to record depth and temperature. Camera drops lasted from 10-60 minutes and ranged from 70-170 m depth.

For further information, contact Dr. Richard Marasco, Director, Resource Ecology and Fisheries Management Division, Alaska Fisheries Science Center, National Marine Fisheries Service, 7600 Sand Point Way NE, Building 4, Seattle, WA 98115-6349, Telephone: (206)526-4172

Seguam Atka mackerel Tag Recovery 2004

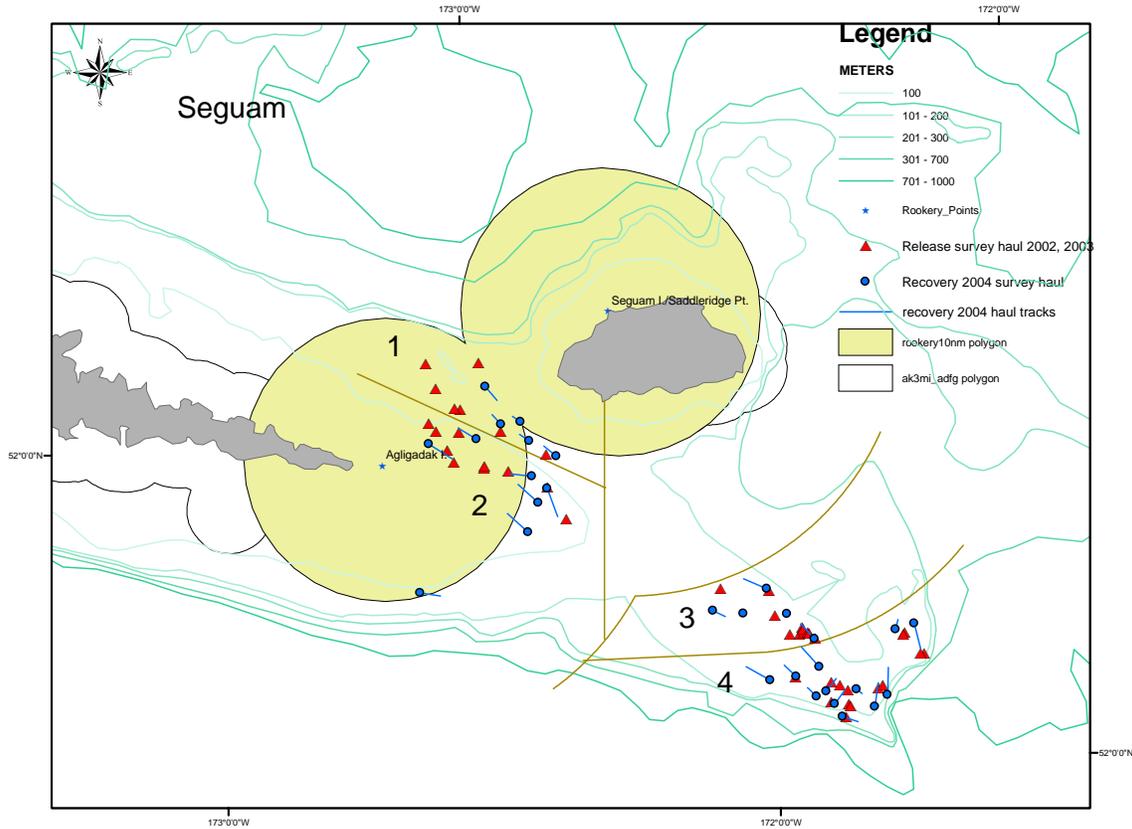


Figure 1: Strata locations and tag-release and recovery haul locations near Seguam Pass. Areas 1, 2 and 3 are inside the trawl exclusion zones, area 4 is outside the trawl exclusion zone. Tag-release haul locations are from the 2002 tag-release survey (no tags were released in 2003 or 2004).

Amchitka Atka mackerel Tag Recovery 2004

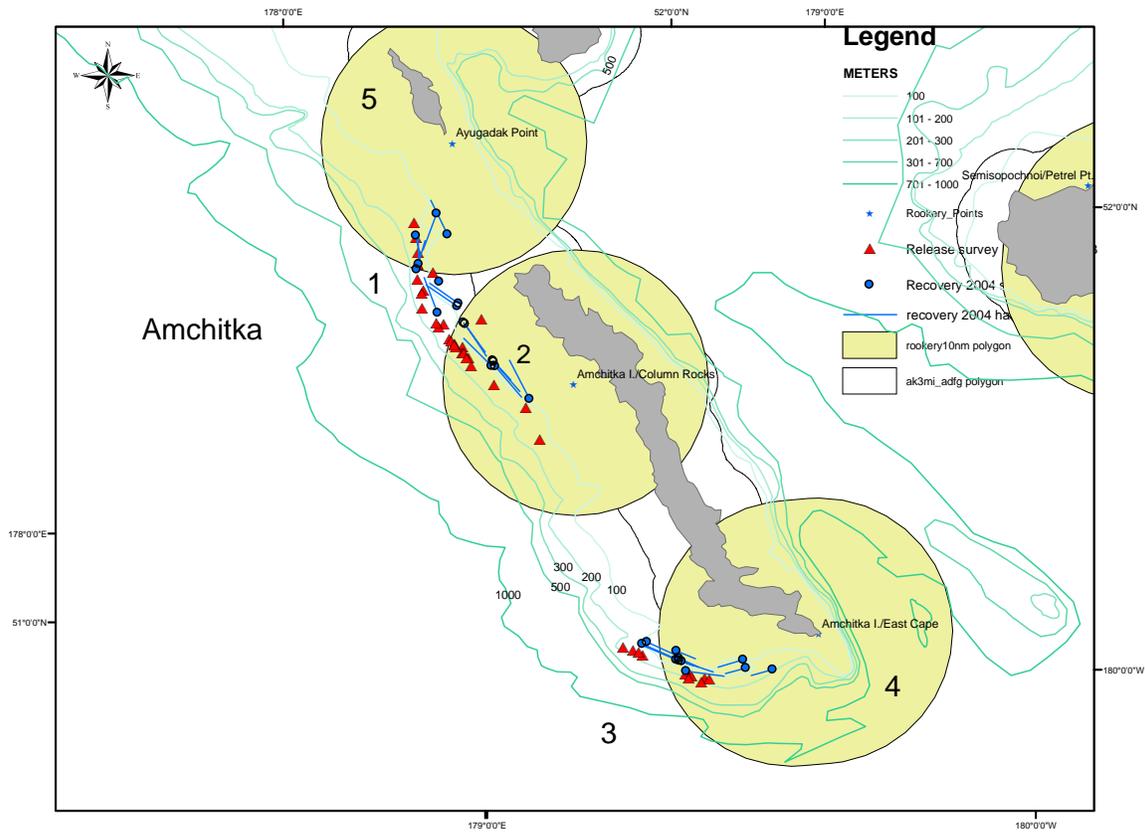


Figure 2. Strata locations and tag-release and recovery haul locations near Amchitka Island. Strata 2, 4 and 5 are inside the trawl exclusion zone, strata's 1 and 3 are outside the trawl exclusion zone. Tag-release haul locations are from the 2003 tag-release survey (no tags were released in 2004).

Tanaga Atka mackerel Tag Recovery 2004

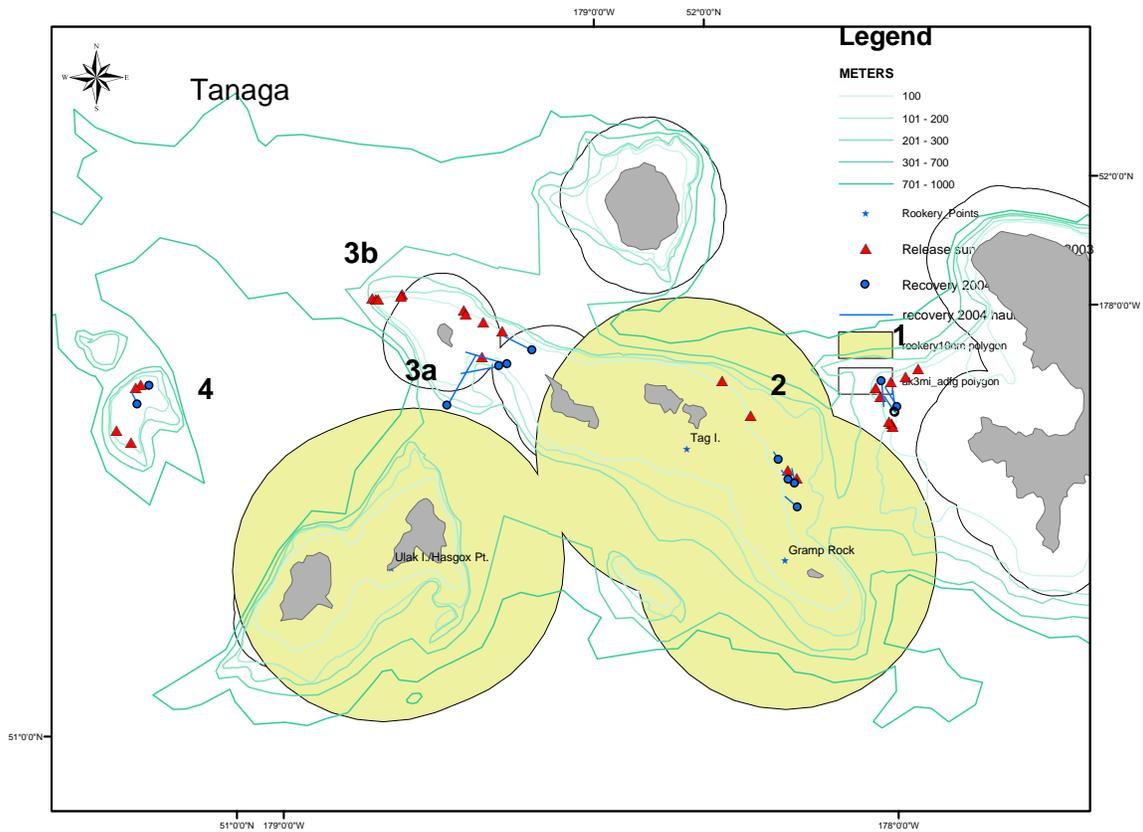


Figure 3: Strata locations and tag-release and recovery haul locations near Tanaga Island. Areas 1, 2 and 3 are inside the trawl exclusion zones, area 4 is outside the trawl exclusion zone. Tag-release haul locations are from the 2002 tag-release survey (no tags were released in 2003 or 2004).

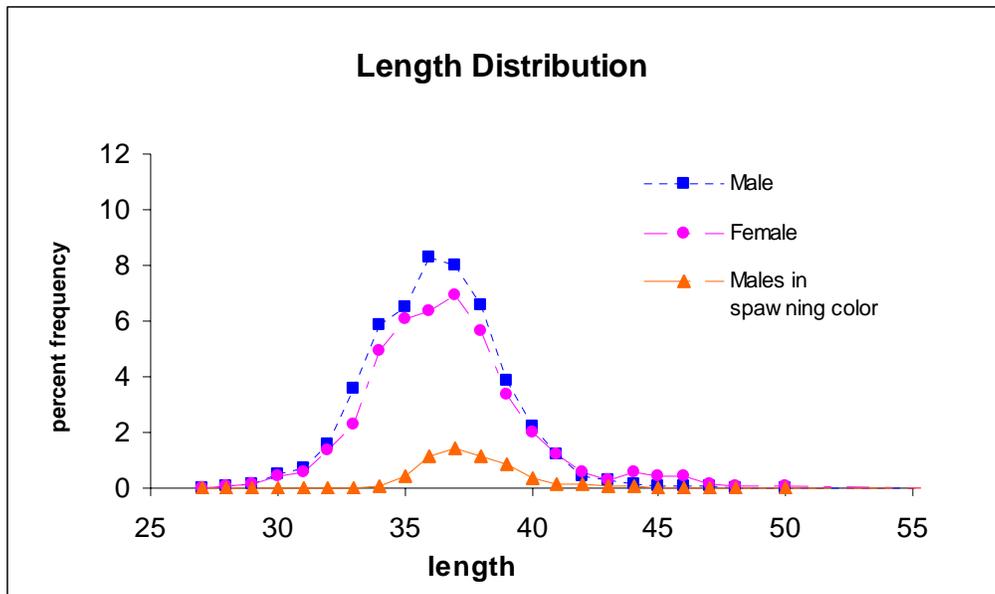


Figure 3: Seguam Pass. Percent length frequency distributions by sex for Atka mackerel during the recovery cruise in 2004. Note that all three categories add up to 100 %.

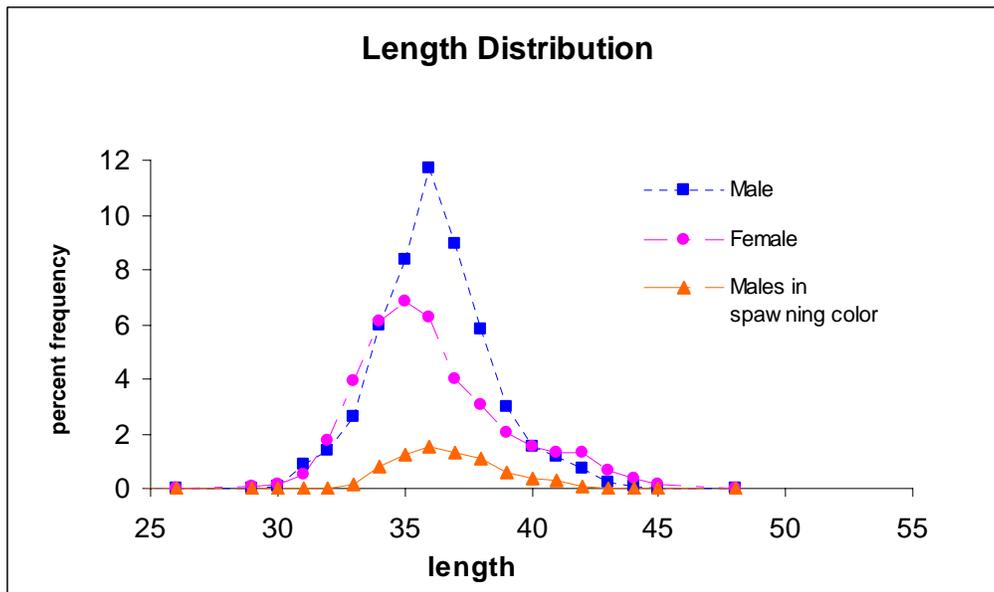


Figure 4: Amchitka Island. Percent length frequency distributions by sex for Atka mackerel during the recovery cruise in 2004. Note that all three categories add up to 100 %.

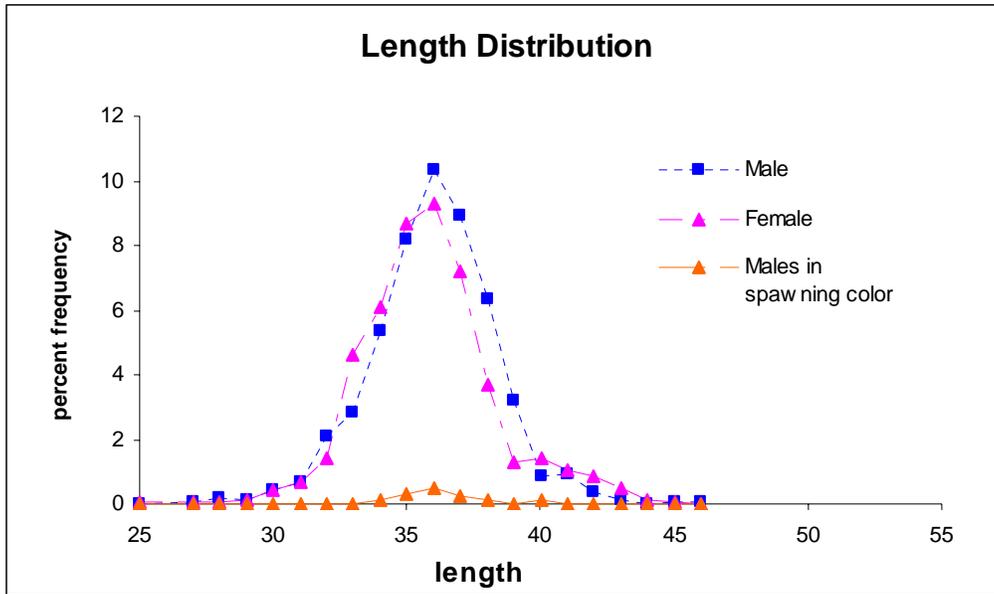


Figure 5: Tanaga Island. Percent length frequency distributions by sex for Atka mackerel during the recovery cruise in 2004. Note that all three categories add up to 100 %.

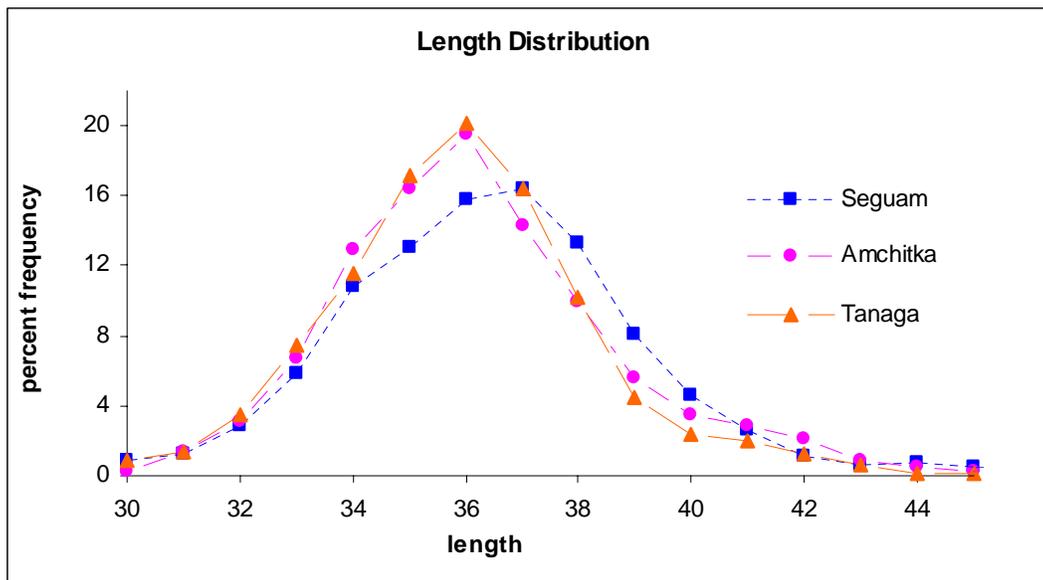


Figure 6: Percent length frequency distributions by area for Atka mackerel during the recovery cruise in 2004. Note that all three categories add up to 100 %

Table 1. *Number of tows per strata*

Strata	1	2	3	4	5
Seguam Pass	6	7	6	13	N/A
Amchitka Island	4	7	3	6	5
Tanaga Island	4	4	4 (3a Only)	2	N/A

Table 2. *Atka mackerel catch per strata in metric tons*

Strata	1	2	3	4	5
Seguam Pass	245.26	169.62	99.65	324.52	N/A
Amchitka Island	22.37	91.08	79.07	102.49	41.10
Tanaga Island	50.03	120.36	44.07	98.95	N/A

Table 3. *Atka mackerel and bycatch summary per area in metric tons*

Catch in MT	Atka mackerel	Bycatch
Seguam Pass	836.05	66.40
Amchitka Island	336.13	161.35
Tanaga Island	313.42	47.40
Total	1485.60	275.15

Table 4. *Total number of biological samples collected*

Samples Collected	Seguam Pass	Amchitka Island	Seguam Pass
Gonads	300	225	130
Stomachs	300	225	130
Otoliths	300	225	130
Lengths	4806	3355	2122

Table 5. Total catch by species at all three study areas in MT

Species Name	Seguam in MT	Amchitka in MT	Tanaga in MT
atka mackerel	836.05	336.13	313.42
pacific cod	27.00	28.55	16.20
pacific ocean perch	22.73	20.19	10.78
northern rockfish	8.87	93.54	15.23
pacific halibut	1.41	0.48	0.24
walleye pollock	0.73	8.29	1.74
Irish lord	0.34	2.80	0.53
yellow Irish lord	0.17	2.75	0.17
invertebrate unident.	0.46	2.32	0.85
Bycatch species below 1 metric tons			
alaska skate	0.16	0.68	0.00
aleutian skate	0.11	0.00	0.00
antlered sculpin	0.00	0.00	0.00
arrowtooth flounder	0.73	0.02	0.10
atka mackerel egg mass	0.01	0.03	0.00
bigmouth sculpin	0.04	0.00	0.05
black rockfish	0.00	0.00	0.00
blackfin poacher	0.02	0.00	0.00
blackfin sculpin	0.01	0.00	0.00
brown Irish lord	0.00	0.00	0.00
chrysaora jellyfish	0.00	0.00	0.00
chum salmon	0.16	0.00	0.08
crab unident.	0.00	0.00	0.00
dark dusky rockfish	0.02	0.04	0.01
darkfin sculpin	0.01	0.08	0.00
dusky rockfish	0.01	0.00	0.00
fish unident.	0.00	0.00	0.00
fourhorn poacher	0.00	0.00	0.00
great sculpin	0.00	0.11	0.00
greenland turbot	0.00	0.04	0.00
greenling unident.	0.00	0.02	0.00
grenadier unident.	0.00	0.02	0.00
gunnel unident.	0.00	0.00	0.00
harlequin rockfish	0.00	0.02	0.00
invertebrate eggs unident.	0.01	0.04	0.00
kamchatka flounder	0.01	0.05	0.39
light dusky rockfish	0.73	0.10	0.05
longfin Irish lord	0.00	0.00	0.00
longfin sculpin	0.00	0.00	0.00

Species Name	Seguam in MT	Amchitka in MT	Tanaga in MT
Bycatch species below 1 metric tons			
snailfish unident.	0.00	0.00	0.00
lumpsucker unident.	0.00	0.00	0.00
mud skate	0.00	0.00	0.09
Myoxocephalus sp.	0.00	0.01	0.02
non-biological material	0.00	0.00	0.00
northern rock sole	0.61	0.29	0.06
octopus unident.	0.00	0.04	0.00
pacific sleeper shark	0.27	0.00	0.00
pacific spiny lumpsucker	0.00	0.00	0.00
prowfish	0.27	0.23	0.20
redstripe rockfish	0.05	0.00	0.00
rex sole	0.00	0.00	0.00
rock sole sp.	0.33	0.15	0.45
ronquil unident.	0.00	0.00	0.00
rougheye rockfish	0.01	0.03	0.02
sablefish	0.01	0.00	0.04
scissortail sculpin	0.01	0.00	0.00
sculpin unident.	0.36	0.10	0.05
searcher	0.02	0.00	0.00
shortraker rockfish	0.00	0.05	0.00
shrimp unident.	0.00	0.00	0.00
skate unident.	0.05	0.00	0.00
snailfish unident.	0.01	0.02	0.00
southern rock sole	0.00	0.06	0.00
squid unident.	0.00	0.19	0.03
whiteblotched skate	0.63	0.00	0.00

Table 6. *Tag reporting rate in Seguam Pass*

Tags	Percent recovered
Single Pink Tag	93.4%
Double Pink Tag	98.2%

Table 7. *Tag recovery at Amchitka Island*

Tags	Percent recovered
Single Pink Tag	96.0%
Double Pink Tag	100%

Table 8. *Tag reporting rate Tanaga Island*

Tags	Percent recovered
Single Pink Tag	95.0%
Double Pink Tag	100%